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NEW SPECIES OF EMPIDIDÆ FROM PANAMA

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The empids described herein were all collected by the author during the months of December, 1928, and January and February, 1929, and represent the undescribed species in the collection. In addition to those of which descriptions are given, representatives of the following species were secured: *Euhybos verrucicrus* Melander, *Syneches pusillus* Loew?, *Opeatocerata rubida* Wheeler and Melander, *Drapetis calva* Melander, *Drapetis luteicollis* Melander and *Drapetis tenera* Melander.

It may be noted that the collection of Empididæ from the region is small, and no doubt further collecting will bring to light many more species. The number of species described from Costa Rica is several times greater than the number known from Panama, which indicates that we know but little of the empid fauna of the Canal Zone. During my collecting I found only occasional specimens and seldom more than two or three specimens in a single day.

The types of the new species will be found in The American Museum of Natural History.

EUHYBOS Coquillett

This is evidently the predominant genus of Empididæ in Central America and almost half of the species secured in the Canal Zone belong here. The adults are found in long grass and on the leaves of low bushes, where they lie in wait for insect prey. I have observed them feeding upon chironomid midges, but no doubt they capture and devour any small, weak insect that comes within their range. According to my observations the captures are made on the wing.

References to the position of the species in Melander's key refer to the key published in 'Genera Insectorum,' Fascicle 185.

TABLE OF SPECIES

1.—Ventral surface of the posterior femora with one or more mammiferous swellings which are usually setose ..... 2.

Ventral surface of posterior femora with only setigerous tubercles ..... 3.

2.—Posterior tibiæ with a mammiform process at the apical third of the dorsal surface ..... *verrucicrus* Melander.
Posterior tibiæ with a large posterior swelling near the basal third . . *antiqua*, n. sp.
3.—Posterior tibiæ more or less excavated, or partly compressed ventrally ..... 4.
Posterior tibiæ regular in form ..... 5.
4.—Wings hyaline ..... *vitripennis*, n. sp.
Wings blackish brown, paler apically ..... *donato*, n. sp.
5.—Wings cinereous hyaline ..... 6.
Wings brown on almost the basal half ..... 7.
6.—Stigma pale brown, conspicuous ..... *algens*, n. sp.
Stigma not darkened ..... *agens*, n. sp.
7.—Wings paler brown to the apex (♀) ..... *donato*, n. sp.
Wings hyaline on apical half or more ..... 8.
8.—Stigma very pale brownish, inconspicuous ..... *negundus*, n. sp.
Stigma brown ..... *panamensis*, n. sp.

Euhybos antiqua, new species

Black, the legs partly reddish; wings brown on basal half. Length, 5 mm.

MALE.—Head black-haired; occiput grayish-brown pollinose; antennæ black, the third segment elongate oval, twice as long as wide; arista more than two and one-half times longer than antenna; palpi black.

Thorax shining black; notopleura, posterior slopes of the mesonotum, posterior half of the pleura and the lower border in front, thinly brown pollinose. Mesonotal hair rather brownish in front, black posteriorly. Scutellum with one pair of strong bristles and four pairs of marginal hairs.

Coxæ, femora, posterior tibiæ and apical three segments of the tarsi, black; anterior four tibiæ brownish; basal three tarsal segments reddish yellow. Anterior four femora with short hair, the posterior pair with erect hair and numerous bristles, greatly enlarged, the bristles arranged as follows: two anterodorsal on the apical third; five anterior, two posterior, eight anteroventral arising from conspicuous tubercles, ten to twelve ventral, and about eight posteroventral, four of which arise from strong, mammiform tubercles on the postmedian fourth, one of these processes evidently complex. Anterior tibiæ thickened on the basal fourth, the swelling ending in a tiny spine on the ventral surface; hair moderately long and fine; only the apical bristles present. Middle tibiæ with a row of four or five long, slender bristles dorsally. Posterior tibiæ with a large (ventrally concave?) swelling at the basal third of their posterior surface and, when viewed from above, gently concave on their anterior surface. Anterior and middle tarsi with fine bristles above at the apex, the basal segment with several situated along the whole length; basal segment of middle tarsi with two anterior and two posterior bristles and with a very long ventral bristle near the base. First segment of the posterior tarsi with two fine, dorsal bristles.

Wings dark brown on more than the basal half, pale brownish apically, the stigma dark brown. Costal cell conspicuously, though not remarkably widened. Squamæ and their fringe brown. Halteres brown.

Abdomen shining black, a little bronzed dorsally, the hair black, yellowish on the sides. Genitalia of moderate size, the upper lamella ending in a long, curved, spine-like process, the lower one flattened, concave apically, the apical corners not acute.

TYPE.—Male, Fort Davis, February 9, 1929.

E. antiqua is evidently related to *dentipes* Wiedemann but the blackish posterior tibiæ, lacking a median pale band, will at once distinguish it.

Euhybos vitripennis, new species

Shining black, the abdomen with bronze and steel-blue reflections; legs partly yellow; wings hyaline. Length, 3.5 mm.

MALE.—Occiput grayish-brown pollinose; hair black. Palpi and antennæ black, the third antennal segment oval, one-half longer than wide.

Thorax with short, sparse hair, the notopleura, posterior slopes of the mesonotum and the pleura, grayish-brown pollinose, the mesopleura bare. Scutellum with one pair of strong bristles and two pairs of very weak marginal hairs.

Coxæ, femora, apical two tarsal segments and the apical half of the posterior tibiæ, black; apices of the femora, the tibiæ and basal tarsal segments reddish yellow. Anterior legs simple, the first segment of their tarsi with several bristly hairs above. Middle legs simple, the tibiæ and first segment of the tarsi with three weak bristles dorsally. Posterior femora moderately swollen, with bristles as follows: one dorsal at the apical fourth; one preapical anterodorsal; a row of anteroventral, the apical four or five arising from mammiform tubercles; an isolated posteroventral at the basal fourth and a row of five or six on the apical third, the latter arising from weak mammiform tubercles. Posterior tibiæ slender on more than the basal half, strongly swollen apically; at the basal third of their anterior surface with a large, low swelling; on the dorsal surface of the swollen part with a few fine, bristly hairs.

Wings hyaline; stigma colorless. Squamæ and halteres brown.

Abdomen with bronze reflections, the apical half more or less steel-blue in some lights. Hair very short, black, longer and yellow on the sides basally. Genitalia of moderate size, the upper lamella terminating in a short, straplike appendage, the lower composed of two parts, one of which is long and straplike, gently broadened on the apical half and bearing four short bristles on one side near the apex, the other lobe broader, deeply but unequally excavated at the apex, one of the short lobes roundish, narrowed to the base, the other broad, with convex apex.

TYPE.—Male, Barro Colorado Island, January 5, 1929.

The posterior femora of this species are considerably like those of *purpureus* Walker, but the wings are hyaline, etc.

Euhybos donato, new species

Black, the abdomen with violaceous reflections; wings brown, paler on the apical third; costal cell broadened; legs partly yellowish. Length, 4.5 to 5 mm.

MALE.—Head black, black-haired; occiput brown pollinose; palpi brown. Antennæ black, third segment four times as long as wide, the arista about twice as long as antenna.

Thorax shining black; notopleura, posterior slopes of the mesonotum, broad free border of the scutellum, and the posterior half and lower border of the pleura anteriorly, brown pollinose; pile black. Scutellum with five pairs of marginal bristles.

Legs black; knees, apices of posterior tibiæ and the basal two or three tarsal segments reddish yellow; anterior four tibiæ brownish yellow or brownish with pale base and apex. Anterior four femora simple, the posterior pair greatly enlarged, with

bristles as follows: one anterodorsal at the apical fourth; two anterior, a row of stout posteroventral and two approximate rows on the ventral surface. Anterior tibiæ with a long bristle on either side at the apex, the middle pair with a row of very fine dorsal bristles and the usual long apical one on the ventral surface. Posterior tibiæ laterally compressed, the ventral surface carinate on more than the basal half, flattened beyond the middle, the apex swollen. Basal segment of the anterior four tarsi with long fine bristles dorsally and apically, the second segment with long bristles at the apex; basal segment of middle tarsi with a very long basal bristle below. Posterior tarsi simple.

Wings brown, paler on the apical third; costal cell moderately wide (twice as wide as usual). Squamæ and halteres brown.

Abdomen bronze-black, black-haired, the sides with tawny hair basally. Genitalia of medium size, the upper lamella ending in a curved spine, the lower deeply, subtriangularly emarginate at the apex.

FEMALE.—Posterior femora much less swollen, without bristles on the basal fourth; abdomen more or less violaceous. Ovipositor long, tapering, curved, the concavity below.

TYPES.—Holotype, male, Barro Colorado Island, January 5, 1929. Allotype, female, Barro Colorado, January 11, 1929. Paratypes: six specimens of each sex, Barro Colorado, December 30, 1928 to February 19, 1929 and one male, Fort Randolph, February 6, 1929 (Curran).

Euhybos algens, new species

Black; legs brown; wings hyaline, the stigma pale brown. Length, 3.5 mm.

MALE.—Head black-haired; occiput grayish-brown pollinose; palpi brown. Antennæ black, the third segment elongate oval, a little more than twice as long as wide.

Thorax shining black, the posterior half of the pleura thinly grayish-brown pollinose. Hair black. Scutellum with a pair of strong bristles and two pairs of marginal hairs.

Legs black; tibiæ brown; basal three tarsal segments yellowish. Anterior four femora simple, the posterior pair strongly swollen, bristled as follows: two anterodorsal, two anterior, two rows of anteroventral and a row of posteroventral in addition to about six bristles inside the posteroventral row on the apical fifth. Tibiæ simple, the middle pair with a row of short bristles above, the posterior pair with weak anterodorsal bristles. First segment of the anterior tarsi with two or three posterior and dorsal bristles in addition to the apical ones, the second segment with apical bristles; first segment of the middle tarsi with two posterior bristles on the basal third, a long dorsal near the middle and the apical bristles; first segment of posterior tarsi with two or three fine bristles above.

Wings cinereous hyaline, the stigma pale brownish. Squamæ and halteres brown.

Abdomen bronze-black, with more or less steel-blue tinge apically; hair black, yellow on the sides basally. Genitalia rather small, the upper lamella broad, concave at the apex; lower lamella divided into two straplike processes, one of which is curved and furcate at the apex.

TYPE.—Male, Barro Colorado Island, December 22, 1928 (Curran).

This species traces to *ardopeodes* Melander, but the femora are very much longer than the tibiæ.

Euhybos agens, new species

Black; tarsi yellowish basally; wings hyaline, without stigma. Length, about 3.5 mm.

MALE.—Head missing. Thorax black, a small, transverse prescutellar spot, posterior half of the pleura and the pectus, thinly brownish pollinose. Hair black; scutellum with a pair of weak bristles and two pairs of weak hairs.

Legs black, the basal two segments of the anterior four tarsi and the base of the posterior pair, yellowish. Anterior legs simple, the first segment of their tarsi with a long anterior, posterior and dorsal bristle on the basal fourth and weak, long apical bristles, the second segment with weak apicals. Middle tibiæ with a dorsal row of bristles, the first segment of their tarsi with three long bristles above and a very long anteroventral bristle at the basal fourth. Posterior femora moderately swollen, with bristles as follows: three or four anterior on the median half, two posterodorsal, one posterior, a double row of anteroventral and a row of posteroventral. Posterior tibiæ simple, with a row of weak bristles anterodorsally, the first segment of their tarsi with a bristle above near the middle and with two or three at the apex.

Wings cinereous hyaline, without stigma. Squamæ and halteres brown.

Abdomen brownish black, black-haired, the sides with yellowish hair except apically. Genitalia of moderate size, the upper lamella very broad, truncate apically, with three short bristles on the apex to the right of the middle line; lower lamella, broad and long, curved to meet the upper, its apex produced as a very short lobe on the left half.

TYPE.—Male, Barro Colorado Island, Canal Zone, December 19, 1928 (Curran).

This species traces to *trixothrix* Melander but may be at once distinguished by the absence of the stigma.

Euhybos negundus, new species

Black, the abdomen with steel-blue or violaceous reflections; legs partly reddish yellow; wings brown on basal half; stigma only a little darkened. Length, 4.5 to 5 mm.

MALE.—Head black-haired; occiput brownish pollinose; palpi black. Antennæ black; third segment elongate oval, a little more than twice as long as wide.

Thorax shining black, the lateral margins, posterior depression and the posterior half and lower border of the pleura brownish pollinose. Hair black; scutellum with two pairs of strong bristles and two pairs of weak hairs.

Legs black, the basal two tarsal segments reddish. Anterior four femora simple, the posterior pair strongly swollen, with bristles as follows: one dorsal, one anterodorsal near the apex, three anterior, those at the middle situated one above the other, a double row of anteroventral, the inner row interrupted near the apical third where those in the apical row become more ventral, one posterior bristle and a row of posteroventrals. Anterior tibiæ with three bristles apically, the middle pair with a dorsal row and the usual long apical below; posterior tibiæ slightly compressed, carinate ventrally and ending in a weak, broad spur. First and second segments of the anterior four tarsi with fine bristles above, those on the second segment limited to the apex; first segment of the middle tarsi with a very long posteroventral bristle near the base. Basal two segments of the posterior tarsi wholly yellow-haired, the first segment with two fine dorsal bristles.

Wings brown on the basal half, the stigma very pale brown. Squamæ and halteres brown.

Abdomen shining black, with violaceous or bluish reflections, black-haired, the sides with yellow hair. Genitalia rather large, the upper lamella broad, greatly elongated, ending in a curved, spinelike process, at its apical fourth with a broad lobe or angulation on either side, beyond which the lamella is greatly narrowed; lower valve with the right side produced as a broad, apically angularly concave process, the left lobe small, curved inward and apparently narrowed apically.

FEMALE.—Differs in having the posterior femora somewhat smaller. The abdomen is truncate at the apex, the ovipositor seen from above, very narrow basally, suddenly broadened with truncate base, the sides coarctate, the apex very broadly rounded, the apical part arising below, tapering and ending in two long, narrow valves. The basal constriction is not strongly indicated in lateral view.

TYPES.—Holotype, male, Barro Colorado Island, December 23, 1928. Allotype, female, Barro Colorado, January 10, 1929. Paratypes: female, Barro Colorado, December 28, 1928, and female, Patilla Point, January 15, 1929 (Curran).

Euhybos panamensis, new species

Black, the abdomen bronzed; legs partly yellow; wings brown on more than the basal half, the stigma brown. Length, 4.5 mm.

MALE.—Head black-haired; occiput grayish-brown pollinose; palpi blackish. Antennæ black, the third segment elongate oval, a little more than twice as long as wide.

Thorax shining black, the sides and posterior border, and posterior half and lower border of the pleura brownish pollinose. Hair black, the scutellum with one pair of strong bristles and two pairs of marginal hairs.

Legs black; knees, basal two or three tarsal segments and the apex of the posterior tibiæ reddish. Posterior femora moderately swollen, the hair and bristles as in the preceding species, the posterior tibiæ without a spur.

Wings brownish on more than the basal half, the brown stigma isolated. Squamæ and halteres brown.

Abdomen black, bronzed above; hair black, yellow on the sides. Genitalia moderately large, formed very much as in *negundus* but the produced upper lamella ends in a broad, apically truncate process instead of an acute spinelike one.

TYPE.—Male, France Field, January 18, 1929 (Curran).

LACTISTOMYIA Melander

The following key includes all the described species belonging to this genus.

TABLE OF SPECIES

1.—Wings hyaline; without stigma ..... *hyalina* Bezzi.
Wings tinged with brown or partly deep brown ..... 2.
2.—Wings uniformly colored ..... 3.
Wings with the broad apex paler brown or hyaline ..... 4.
3.—Tibiæ and tarsi wholly yellow ..... *piceus* Wiedemann.
Posterior tibiæ blackish dorsally and ventrally ..... *insolita* Melander.

4.—Legs honey-yellow with black spines ..... *sequens* Melander
Posterior femora black or brownish ..... 5.
5.—All the femora black ..... *nigripes*, n. sp.
Anterior four femora dark reddish ..... 6.
6.—Posterior tibiæ of the male with a strong, mammiform process at basal fourth; front tibiæ with small ventral tooth at basal fourth ..... *mammifera*, n. sp.
Posterior tibiæ simple ..... *serrata Bezzi.*

Lactistomyia nigripes, new species

Black, with brownish pollen; wings dark brown on the basal two-thirds, cinereous hyaline apically. Length, 5.5. mm.

MALE.—Face linear, slightly widened above where it is evidently thinly brownish-gray pollinose; front distinct on lower fifth. Proboscis as long as the head-height; palpi blackish. Antennæ black; third segment oval, pointed apically; arista very long and slender. Occiput thinly grayish-brown pollinose, black-haired.

Thorax black, brownish pollinose, black-haired, the mesonotum rather yellowish pilose on the anterior two-thirds. Scutellum with four pairs of bristly, marginal hairs, the subapical pair strong.

Legs black; apices of the femora, and the bases of the tibiæ, the middle pair wholly, reddish. Hair black. Anterior tibiæ posterodorsally with a row of short cilia; middle tibiæ posteriorly with a row of rather long, bristly cilia; anterior and middle tarsi with long hair above, the basal segment with long hair below on either side. Posterior femora with an entire row of short spinose tubercles on either side below, their tibiæ bare except for two rows of rather short hairs above; posterior tarsi much shorter than the others and with shorter hair, the first segment not unusually hairy below.

Wings dark brown on the basal two-thirds, cinereous-hyaline apically. Squamæ brownish, with blackish border. Halteres brown.

Abdomen black, moderately brown pollinose, with long brown hair on the sides and long, coarse black hair on the genitalia.

HOLOTYPE.—Male, Barro Colorado Island, January 5, 1929 (Curran).

Lactistomyia mammifera, new species

Blackish, the anterior four femora and the sides of the thorax rather reddish; pollen brown. Length, 5.5 mm.

MALE.—Face linear, brownish-gray pollinose; frontal triangle very small. Proboscis brownish red; palpi black. Antennæ black, the third segment elongate-oval, pointed apically.

Mesonotum blackish or brown in ground color, brown pollinose, the sides more or less reddish; hair yellow in front, longer and black behind. Scutellum with four pairs of marginal hairs and a pair of bristles. Pleura mostly reddish, the pollen brownish gray.

Anterior four legs, including the coxæ, reddish, the posterior legs ferruginous or brown, their tarsi reddish; apical segment of all the tarsi blackish. Anterior four femora normal, with rather sparse hair. Anterior tibiæ at the basal fourth of the ventral surface with a small, acute, tooth, the hair not strikingly long; anterior tarsi with abundant, longish hair posteriorly and ventrally on the basal two segments, the

first segment with three, the second with two long bristles above. Middle tibiæ with a row of four dorsal bristles and with ciliate hairs posteriorly and anteroventrally. First segment of the middle tarsi with two bristles above, and three posteroventrally, the hair abundant and fine on the ventral surface of the basal two segments. Posterior trochanters with a short, stout bristle at the base below. Posterior femora strongly swollen, with an entire row of eleven setigerous tubercles on the ventral surface anteriorly and an irregular interrupted row of eight or nine posteriorly on this surface, those on the apical half mammiform and very strong; the setæ are short; on the apical fifth of the anterodorsal surface there are two bristles; hair normal. Posterior tibiæ arcuate, with sparse hair arranged in rows, strongly shining, on the basal fourth of the ventral surface with a strong mammiform process. Posterior tarsi very short, the long basal segment somewhat compressed laterally; hair short.

Wings dark brown, paler apically and posteriorly. Squamæ and halteres brown, the squamal fringe golden brown.

Abdomen black, rather thinly brown pollinose, the sides more or less reddish in ground color; dorsum with short, inconspicuous black hairs, the sides with rather yellowish pile. Genitalia brown pollinose, black-haired.

TYPE.—Male, Barro Colorado Island, Canal Zone, December 26, 1928 (Curran).

Empis panamensis, new species

Black, the legs extensively reddish; anterior branch of third vein almost transverse; wings pale brownish. Length, 4.5 mm.

FEMALE.—Face and front of equal width, shining, a rectangular spot enclosing the base of the antennæ gray pollinose; face perpendicular, the upper third transversely striate, median third with upwardly arched striæ, the lowest third smooth. Lower half of the front depressed on more than the median half, on either side with three proclinate bristles. Occiput gray pollinose, the hair black, bristly except on the lower part. Proboscis three-fourths longer than the height of the head; palpi brown. Antennæ black, as long as the head; third segment onion-shaped, five times as long as wide, the basal fourth globular; style poorly differentiated from the third segment, a little longer than the width of the segment.

Thorax moderately gray pollinose, with two inconspicuous, wide, median vittæ of darker color due to thinner pollen. Mesonotum bristled, without hair; acrosticals small, about eight arranged in pairs. Scutellum with two pairs of marginal bristles. Hypopleura with black bristles. Coxæ black, gray pollinose, black-haired. Femora reddish, more or less brown basally, the posterior pair darkened almost to the middle, the median pair on the basal fourth. Posterior femora with a row of anterodorsal bristles on the apical half and two anterior bristles on the apical fourth. Tibiæ each with anterodorsal and posterodorsal row of bristles, the posterior four each with anteroventral and posteroventral row. Tibiæ, first segment of anterior and posterior tarsi, apices of the tarsal segments and the whole of the apical segment, brownish. Basal segment of anterior tarsi distinctly swollen, long pubescent beneath; first segment of all the tarsi with anterodorsal, posterodorsal, anteroventral and posteroventral bristles, the other segments with only apical bristles; tarsi brownish yellow.

Wings strongly tinged with dark brown; venation normal, the anterior branch of the third vein almost transverse. Squamæ grayish, with brown border and fringe. Halteres black, the stem brownish red.

Abdomen shining black, black-haired, the apices of the segments with bristles.
TYPE.—Female, Barro Colorado Island, January 11, 1929 (Curran).

E. panamensis is related to *annulipes* Wheeler and Melander but the smaller size, shining face, front and abdomen, more bristly legs, etc., at once separate it. In *annulipes* the head is gray pollinose, the face bears a double row of black hairs on either side, there are four pairs of frontal hairs, the squamæ are yellowish, the abdomen gray and black fasciate and the legs bear fewer bristles.

AXELEMPIS, new genus

This genus belongs in the subfamily Clinoceratinæ. In 'Genera Insectorum,' Fascicle 185, it does not fit any of the alternatives, differing from the first in having the third antennal segment very much elongate; the antennal characters would place it under the second alternative but the long proboscis excludes it, as does also the linear front; it is excluded from the third group by having the antennæ situated at the middle of the head, the long third antennal segment, etc. The resemblance to the genus *Porphyrochroa* Melander, placed in the Empidinæ by Melander, is striking inasmuch as the shape of the insect is the same, the differences being that in *Porphyrochroa* the antennæ are situated near the upper fourth of the head and the wing has a strong anal lobe. In all other respects the figure of *Porphyrochroa* will apply quite well, in so far as structure and chætotaxy are concerned, to the type species of *Axelempis*.

Head about as high as long, the occiput very wide; proboscis slightly longer than the head-height, perpendicular, the fleshy basal part not extending beyond the middle; face and front linear; cheeks extremely narrow, not notched; antennæ longer than the head, the straplike, third segment and short, poorly differentiated style alone equal to the height of the head. Thorax with weak bristles, four or five dorsocentrals, one or two humeral and two notopleural; scutellum with one pair of bristles and a pair of hairs; metapleura with bristly hairs; a single propleural hair. Legs long and slender, the posterior pair with or without long bristles above. Wings narrow basally, without anal lobe; third vein not branched; apex of anal cell acute anteriorly, more or less parallel with wing margin. Abdomen somewhat laterally compressed in the male, broad in the female; male genitalia somewhat enlarged, opening upward.
GENOTYPE.—*Axelempis fulvithorax*, new species.

In *fulvithorax* the posterior tibiæ and the first segment of their tarsi bear long bristles above but the legs are wholly without bristles in *fasciventris*. The posterior tibiæ of the female are clothed on the whole length above, and on the basal third below, with erect scalelike hairs, as in many representatives of the Empidinæ.

Axelempis fulvithorax, new species

Rusty reddish, the head, apical half of the abdomen above and the legs in part, black. Length, 4 mm.

MALE.—Occiput and face thinly gray pollinose; upper fourth of occiput and the front shining black. Hair black; a pair of ocellar and a pair of vertical bristles; palpi yellowish brown, with a single apical hair. First antennal segment longer than the beadlike second; third very long, pubescent, evenly tapering from near the base, the style poorly differentiated, about as long as the first segment.

Thorax wholly shining pale rusty reddish, the pleura more yellowish.

Legs reddish yellow, the broad apex of the posterior femora, apical half of their tibiæ and their tarsi wholly, black; anterior four tarsi black with the basal segment mostly reddish yellow; apex of middle femora narrowly brown. Anterior four legs without bristles except the apical tibial bristles and weak ones on the tarsi; posterior femora apically with four small anteroventral bristles, a strong anterior and a weak dorsal; posterior tibiæ with a row of seven long dorsal bristles, the first segment of their tarsi with five similar bristles above and several short ones on the under surface.

Wings cinereous hyaline, the costal border broadly brown except for half the distance between the apices of the first and second veins; apex of anal cell almost parallel with the wing margin. Squamæ and halteres brown, the stem of the latter reddish.

Abdomen shining, reddish, the apical half above brown, the genitalia black; upper valve of genitalia produced as a moderately long, curved, apically truncate spur. Abdominal hair black, short.

FEMALE.—Front gently widening above, where it is twice as wide as the linear face. Middle tarsi wholly black, the anterior ones almost so; posterior femora with only hairlike bristles; posterior tibiæ with bristles as in the male but in addition with an entire dorsal row of overlapping black scales and a row on the basal fourth of the ventral surface, the posterior tarsi with only two fine dorsal bristles. The wings have a luteous tinge and the broader brown costal border is less broadly and less distinctly interrupted. Abdomen shining black, the base broadly reddish, the sides of the abdomen with more or less distinct, irregular reddish spots, the base of the ovipositor reddish above.

TYPES.—One pair taken in coitu, Barro Colorado Island, December 21, 1929.

These specimens were taken early in the morning along the edge of the clearing surrounding the laboratory.

Axelempis fasciventris, new species

Shining black, the base of the antennæ, proboscis, fourth abdominal segment and legs yellowish. Length, 3 mm.

MALE.—Head wholly shining; vertical bristles very weak; hair black. Proboscis about as long as the head-height, yellow; palpi brown. Antennæ black, the first two segments and base of the third yellow; third segment very long, very slightly narrowing to the apex, the style not as long as the first segment which is almost twice as long as the second.

Bristles of thorax hairlike; scutellum with two pairs of marginal hairs; two bristles on the metapleura; propleural bristle scarcely discernible.

Legs yellow; apical two or three tarsal segments brown; hair fine, fairly abundant on the tibiæ and tarsi; no bristles.

Wings cinereous hyaline; anal cell oblique apically, longest in front; veins brown, those arising from the discal cell almost colorless. Squamæ yellowish. Halteres with black knob and yellow base.

Abdomen shining black, black-haired; fourth segment yellow, with a large brown spot at the apex above. Genitalia moderately large, the upper lamella not produced.

TYPE.—Male, Barro Colorado Island, December 24, 1928 (Curran).

The specimen was found on foliage along a small brook crossing the Shannon Trail near its origin.

COLOBONEURA Melander

TABLE OF AMERICAN SPECIES

1.—Legs with at least the femora black or brown ..... 2.
Legs pale yellow; wings with blackish spots (Maryland) ..... *exquisita* Malloch.
2.—Third antennal segment but little longer than wide ..... 3.
Third antennal segment elongate triangular, at least three times as long as wide (Panama) ..... *longicornis*, n. sp.
3.—Costal border brownish apically; wings grayish hyaline ..... *nubifera* Coquillett.
Wings unicolorous, whitish, especially in life, the veins yellow. *inusitata* Melander.

Coloboneura longicornis, new species

Black or brown, the stem of the halteres reddish; wing veins dark brown. Length, about 2 mm.

MALE.—Head thinly grayish pollinose; front narrow, with a pair of bristles opposite the anterior ocellus and another within the ocellar triangle. Proboscis brown; palpi black, flat, subcordate in outline, short-haired. Antennæ black, the third segment elongate triangular, evenly tapering to the apex; conspicuously pubescent; style longer than antenna.

Thorax rather thinly grayish-brown pollinose; four pairs of dorsocentrals; one presutural; three notopleurals in a row; scutellum with one pair of marginal bristles and a pair of weak hairs; humeral bristles long. Pleura bare except for the single propleural bristle above the front coxæ.

Legs blackish, the femora less swollen than in *inusitata*, the posterior pair longer than the others. Posterior femora with short, weak bristles; an anterior row not extending nearly to the base and an entire, anteroventral row. Anterior tibiæ with two dorsal bristles, the middle pair with a single dorsal bristle and a ciliate row of suberect, moderately short hairs on the ventral surface; posterior tibiæ with three dorsal and two anterior bristles. Tarsi simple.

Wings cinereous hyaline, the veins brown, all of them strong; no stigma; costal ciliation fairly long on the basal half. Squamæ and halteres brown, the stem of the halteres reddish.

Abdomen brown, thinly brownish-gray pollinose, black-haired. Genitalia small, the upper lamella produced straplike, convex apically, curved downward beyond its middle.

FEMALE.—The antennæ are slightly shorter and the two apical bristles on the under side of the anterior four tibiæ are long and prominent, the tibial hair shorter than in the male. The ovipositor is elongate, tapering and ends in two long lamellæ.

TYPES.—Holotype, male, allotype, female, and one paratype, female, Patilla Point, January 15, 1929 (Curran).

In addition to the elongate third antennal segment and much more slender, less bristled legs, this species differs from *inusitata* Melander in having the genitalia smaller and not transverse. Despite the differences mentioned I feel confident that the species is closely related to *inusitata* and that the differences are no more than specific.

The habits of this species are rather peculiar inasmuch as it inhabits holes and crevices in lava rocks which are mostly below the high-tide level. When the tide is in the flies may find refuge in one of two places: they must either rest upon the unsubmerged parts of the rocks where they would be more or less exposed to the salt spray or they must seek refuge on the shore. The specimens captured were taken several hundred feet from the shore-line, but among the rocks not wholly submerged at high tide. It is not uncommon to find empids resting on rocks immediately above the water-line in streams, but these are not or very rarely exposed to the sudden rise of water during the hours of darkness when they are inactive. It may be that *C. longicornis* is crepuscular and that it moves about normally at night. This would explain its presence only in the dark crevices in which it was found. It should be noted, too, that like *C. inusitata* it takes wing only under great provocation, usually running quickly to one side when disturbed, instead of flying. This habit makes capture quite difficult, and while I observed numerous specimens I succeeded in capturing only three during the best part of an hour.